ArduCAM NOIR Raspberry Pi camera with Motorized IR Cut Filter

Posted on **August 12, 2017**

Contents [hide]

Background

Raspberry pi camera has both color version pi camera board and NoIR version pi camera board. So let's take a look at the difference between these two types of camera. The color version pi camera has 650nm IR cut filter on top of the sensor, so it can only sensitive to visible light like human eyes. While the NoIR version pi camera also called IR filter removed pi camera which doesn't have 650nm IR cut filter on top of the sensor, and can sensitive all spectrum of light including ultraviolet light and near infrared light which cannot be seen by humans. So people will think NoIR pi camera is better than the standard color pi camera, because it is sensitive to all spectrum rather than visible light. Yes, it is good, but it depends. The problem of this effect is that the color reproduction is drastically affected.
Unlike your eyes, camera sensors can detect "near infrared" light that just outside the range of the human eye. The image below shows the result.

The plants in this view reflect more infrared than green light so they appear pink in daylight.
To make the image more akin to what humans can see, most cameras are fitted with an infrared-

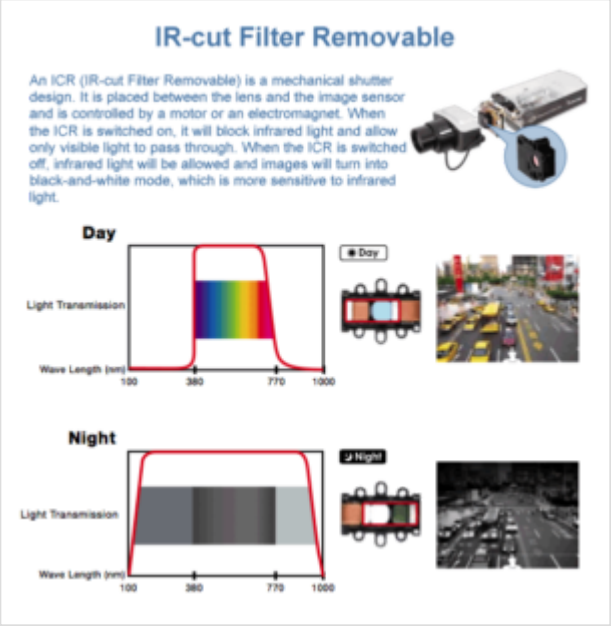
cut filter which only allows visible light to pass through, reflecting unwanted infrared. This is where standard color version pi camera used for.

Motorized (Switchable) infrared-cut filters

There are some instances where capturing infrared light is an advantage. In low-light conditions, cameras capture as much light as possible to produce brighter images, regardless of color. For this reason, some entry-level night-vision cameras don't feature a cut filter, instead capturing infrared light from on-board LEDs at night at the expense of true color reproduction during the daytime.

The optimum solution is to use a switchable infrared-cut filter. In daylight, the filter covers the sensor to provide color footage, while at night the filter opens for a brighter image. In industry terms, these cameras are known as day/night or true day/night cameras.

These cameras can be combined with infrared lamps which are much more discreet than conventional white-light lighting, since the light produced can't be seen by the human eye.



Solution

Sometimes you need the camera to work on both daylight and dark (night time) conditions, like the IP-based security camera. ArduCAM pi cameras now feature a motorized IR-cut filter on NoIR pi camera board, the IR-cut can be switched on in the daylight and can be switched off at night, and cooperated with IR light source for night vision. The highlight of this motorized IR-cut mechanism is no additional cable needed between the Raspberry Pi board and camera board.

— ArduCAM pi camera with motorized IR cut filter

First we have to edit the config.txt file

```
sudo nano /boot/config.txt
```

Add this line at the end of the config.txt file, save and reboot.

```
disable_camera_led=1
```

Then use our provide python script to take normal image with IR-cut on and night vision image with IR-cut off. Using the following commands there are two pictures captured.

```
cd piCamLed
sudo python ./RPI_camera_IR_CUT_NOIR.py
sudo python ./RPI_camera_IR_CUT_IR.py
```

Software Download

Demo software can be downloaded from here.

This entry was posted in **Camera Module Demonstration** and tagged **NoIR**, **NDVI**, **IRCUT** by **Lee Jackson**. Bookmark the **permalink [http://www.arducam.com/arducam-noir-raspberry-pi-camera-motorized-ir-cut-filter/]** .